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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/602,051	06/24/2003	Taichi Hirokawa	67161-054	8130

7590 03/02/2004

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600 13th Street, N.W.  
Washington, DC 20005-3096

EXAMINER
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FENTY, JESSE A

ART UNIT	PAPER NUMBER
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2815

DATE MAILED: 03/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

K.D.

<b>Office Action Summary</b>	Application No. 10/602,051	Applicant(s) HIROKAWA ET AL.	
	Examiner Jesse A. Fenty	Art Unit 2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 June 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                                                        |                                                                                         |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                            | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “first conductive portion having a concave portion connecting to said hole, and said one electrode formed along an inner wall surface of said concave portion” of claim 4 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. In the drawings, the “concave portion” is referred to as item 13a. If so, the one electrode cannot be formed along the inner wall of the concave portion, because the concave portion would be the innermost element of the capacitor structure.

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Jenq (U.S. Patent No. 6,303,430 B1).

In re claim 1, Jenq (Figs. 6H – 6L) discloses a semiconductor device comprising:

A first conductive layer (40);

An insulation layer (46) formed on said first conductive layer and having a hole reaching said first conductive layer, wherein

Said hole has a first portion and a second portion having diameters different from each other, the diameter of said hole discontinuously changes at a boundary (near the boundary of insulation layers 46 and 48) between said first portion and said second portion; and

One electrode of said capacitor (500 $\mu$  tungsten layer; column 5, lines 54-56) formed along an inner wall surface of said hole and electrically connected to said first conductive layer.

In re claim 2, Jenq discloses the device of claim 1, wherein

Said insulation layer has a first insulation layer (46) and a second insulation layer (48) formed on said first insulation layer,

Said first portion of said hole is formed in said first insulation layer, and

Said second portion of said hole is formed in said second insulation layer and has a diameter larger than a diameter of said first portion.

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In re claim 3, Jenq discloses the device of claim 1, further comprising:

A second conductive layer (300 $\mu$  tungsten layer; column 5, lines 51-53) located between said first conductive layer (500 $\mu$  tungsten layer) and said one electrode and electrically connected to both of said first conductive layer and said one electrode (40).

3. Claims 1, 2 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Huang et al. (U.S. Patent No. 5,315,141).

In re claim 1, Kim (Fig. 2F) discloses a semiconductor device comprising:

A first conductive layer (6);

An insulation layer (9) formed on said first conductive layer and having a hole reaching said first conductive layer, wherein

Said hole has a first portion and a second portion having diameters different from each other, the diameter of said hole discontinuously changes at a boundary between said first portion and said second portion; and

One electrode of said capacitor (13) formed along an inner wall surface of said hole and electrically connected to said first conductive layer.

In re claim 2, Kim discloses the device of claim 1, wherein

Said insulation layer has a first insulation layer (9) and a second insulation layer (11) formed on said first insulation layer,

Said first portion of said hole is formed in said first insulation layer, and

Said second portion of said hole is formed in said second insulation layer and has a diameter larger than a diameter of said first portion.

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In re claim 4, as best understood, Kim discloses the device of claim 1, wherein


Said first conductive layer has a concave portion connecting to said hole, and said one electrode is formed along an inner wall surface of said concave portion.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jesse A. Fenty whose telephone number is 571-272-1729. The examiner can normally be reached on 5/4-9 1st Fri. Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 571-272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Jesse A. Fenty  
Examiner  
Art Unit 2815